APPENDIX TO (YOUR FACILITY'S NAME) AREA NAVAL COMPLEX, STATE PEST MANAGEMENT PLAN

EMERGENCY VECTOR SURVEILLANCE AND CONTROL PLAN

(MONTH AND YEAR PREPARED)

Ref: (a) OPNAVINST 6250.4B
(b) DOD Directive 4150.7
(c) BUMEDINST 6250.12C

Encl: (l) Personnel to be contacted before implementing Emergency Disease Vector Plan
(2) List of higher echelon commands to be notified of plan implementation
(3) Environmental factors impacting emergency vector control
(4) Vector-borne diseases, anticipated vectors, and non-disease causing nuisance pests
(5) Pesticides/equipment list

1. Purpose: To establish an emergency vector control plan for the **(YOUR BASES NAME).**

2. Background:

(a) General: **Enter yours installation(s) topographical information. Include things such as, salt-water marshes, storm water ponds, and brackish water. Be sure to state that if there are any protected species or areas. A general description of your present control methods (e.g., moderate ULV spraying from June through August).**

(b) Pest/Vector description. **List the most common disease vector in your area. Give a brief description.**

(c) Methods of Control.

(l) **What is your primary method and why. What is the preferred method of dispersal?**

(2) **What other methods are employed and why.**

3. Action.

a. The Commanding Officer, **(your command),** upon the advice of Head, Preventive Medicine Department will:

(l) Recommend to the Regional Commander that the Emergency Vector Control Plan be initiated.

(2) Inform, via message, the Commanding Officer, Navy Environmental Health Center (NEHC), and the Officer in Charge, NDVECC JAX when the Emergency Vector Control Plan is activated.

(2) Ensure the timely submission of a Disease Event Report, utilizing the Navy Disease Reporting System, should there be any suspected or confirmed cases of vector-borne disease.

b. The Head, Preventive Medicine Department, **(your command)** shall:

(l) Provide disease specific symptoms to the medical staff to potential vectorborne diseases are ruled out in the differential diagnosis for patients presenting with like symptoms.

(2) Maintain appropriate epidemiological surveillance of vector-borne diseases and vector populations prior to, and throughout the emergency. Surveillance will be in cooperation and partnership with **(List the county and state mosquito agencies your base has MOA/MOUs with, if any).**

(3) Coordinate overall mosquito abatement activities onboard area military installations:

(a) Utilize departmentally owned **(type of traps used)** for surveillance. Collections will be performed **(List days traps are to be ran).** Traps will also operate Friday - Sunday with collection on Monday and count averaged for 3 days.

(b) Preventive Medicine Technicians will maintain certification as Category 8, DoD Pest Control Operators and will identify the mosquito catch to Genus. If assistance and/or additional training are necessary, **(Who will provide you with assistance?).**

(c) Taxonomy will be accomplished on the day of trap collection. Identification will be to a minimum of Genus.

(d) The action level per trap/night will be 25.

(e) Trap counts exceeding 25 mosquito will be justification for Preventive Medicine to **(conduct spray operations in trap area or direct PWC or contractor to initiate control procedures).**

(f) **(List who is responsible for on-base area and who is responsible for any off-base area).** In the event of plan activation, PWC and Preventive Medicine will, to all extent possible, establish a partnership with the county in a joint effort for mosquito control and eradication.

(4) Notify the Officer in Charge, NDVECC of the situation and request their assistance in providing consultation, aerial and ground dispersal equipment and personnel certified in aerial application of pesticides.

(5) Provide personnel as may be necessary to conduct an effective, emergency, mosquito abatement program.

(6) Determine availability of adequate insecticides from local sources.

(7) Maintain liaison with both **(your base or regional)** Public Affairs Officers to coordinate press releases and dissemination of information to the public.

(8) When required, prepare information sheets to distribute to base personnel advising of personal protective measures, breeding site reduction and procedures for collection and submission of dead or dying birds.

(9) Maintain liaison with County Mosquito Control Officials to share information and to coordinate efforts.

c. The Navy Disease Vector Ecology and Control Center, Jacksonville, FL will if deemed by appropriate authority:

(l) Establish and deploy an Emergency Vector Control Team.

(2) Establish appropriate vector control procedures and direct all vector control activities for the duration of the emergency.

(3) Inform the Commanding Officer, **(your base name)** of the status of all control activities.

4. Post-emergency action. A detailed After Action Report will be prepared jointly by NDVECC and Head, **(your PREVMED office)** for submission to NEHC and BUMED. It should include specifics on:

a. Vectors involved and population densities.

b. Control measures taken.

c. Effectiveness of method used and method of determination.

d. Problems encountered and suggestions on corrective action.

PERSONNEL TO BE CONTACTED WHEN IMPLEMENTING THE EMERGENCY PLAN FOR DISEASE VECTOR AND PEST CONTROL

(a) Regional Commander and Commanding Officer, **(Your facilities name)** who can authorize additional resources to support Emergency Vector Control:

Name:
Phone: DSN:

(b) Commanding Officer, **(facilities name)**:

Name:
Phone: DSN:

(c) Officer in Charge, Branch Clinic, **(your facilities name)**:

Name:
Phone: DSN:

(d) Environmental Health Officer, **(your facilities name)**:

Name:
Phone: DSN:

(e) Pest Control Supervisor, PWC **(facilities name)**:

Name:
Phone: DSN:
Pest Control Shop:

(f) Naval Facilities, Southern Division, Applied Regional Biologist:

Name: S. E. E. BARTKU
Phone: (843) 820-7140 DSN: 583

(g) Base Veterinarian:

Name:
Phone: DSN:

(h) **(Your local counties Mosquito & Rodent Control Program Manager)**:

Name: Phone:

(i) **(Your counties Health Department, Infectious Disease Surveillence Branch):**

Name: Phone:

(j) State Department of Health, Surveillance Administrator, Bureau of Epidemiology.

Name:
Phone: Email:

COMMANDS REQUIRING EMERGENCY NOTIFICATION

1. Navy Environmental Health Center (NEHC)
   2510 Walmer Ave.
   Norfolk, VA 23513-2617
   DSN: 253-5500, Commercial (757) 462-5500
   FAX (757) 444-3672

2. Navy Disease Vector Ecology and Control Center
   Naval Air Station, Box 43
   Jacksonville, FL 32212-0043
   DSN: 942-2424, Commercial (904) 542-2424
   FAX: (904) 542-4324

3. Navy Environmental and Preventive Medicine, Unit No.2
   1887 Powhatan Street
   Norfolk, VA 23511-3394
   DSN: 564-7671, Commercial (757) 444-7671
   FAX: DSN 564-1191, Commercial (757) 444-1191

ENVIRONMENTAL FACTORS RESULTING IN A VECTOR-BORNE DISEASE OUTBREAK OR INCREASE IN VECTOR/PEST POPULATIONS

1. **Tropical Storms, Severe Thunderstorms, and Hurricanes**

(a) Heavy rain may cause flooding and the production of mosquito breeding sites. Flooding may also prevent access by pest controllers to breeding areas for treatment.

(b) Winds may cause structural damage resulting in the disruption of sanitation services. Consequently, filth fly, rodent and cockroach populations may expand.

(c) Organic debris, generated from a storm, may provide excellent breeding sites for flies and *Culicoides*.

2. **Flooding**

(a) Flooded areas, due to heavy rains, may become breeding sites for mosquitoes.

(b) Restricted access to insect pest populations may prevent pest control activities.

3. **Enter other factors as needed.**

VECTOR-BORNE DISEASES, ANTICIPATED VECTORS, AND NON-DISEASE CAUSING NUISANCE PESTS

West Nile Virus: Febrile illness usually lasting a week or less. Symptoms may mimic the flu. Initial symptoms include fever, headache, malaise, arthralgia or myalgia, and occasionally nausea and vomiting; generally, there is some conjunctivitis and photophobia. Fever may or may not be diphasic (sadleback). Rash is common. Meningoencephalitis is an occasional complication.
Vector Transmission: Bite of infected *Culex* mosquito.
Primary Vectors: *Culex pipiens, Cx. restuans and Cx. salinarius* are thought to be the primary vectors.
Vector Bioeconomics: *Cx.* lays egg rafts in rain barrels, water tanks, cisterns, and temporary pools, but water having high organic content is preferred. Large populations of the species are common in urbanized areas. Adults of *Cx.* feed primarily at night both indoors and out. They readily bite humans but prefer birds.
Control Measures: Restrict outdoor activity, stress personal protective measures. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. When feasible, reduce or eliminate breeding sites mechanically. Maintain constant liaison with County Mosquito Control Program Manager and local Health Department Infectious Disease Division and Agriculture officials to obtain area information about disease threat. Include surveillance for dead birds (especially crows). Coordinate veterinary surveillance and submission of dead bird submission for testing with local Army Veterinarian. Enhance human surveillance at all military medical treatment facilities.

Dengue Fever: An acute febrile viral disease characterized by sudden onset, fever for 3-5 days (rarely more than 7 and often biphasic) intense headache, myalgia, arthralgia, retro-orbital pain, anorexia, GI disturbances and rash. HI, CF, IgG and IgM ELISA and neutralization tests are diagnostic aids.
Vector Transmission: Bite of an infective *Aedes* mosquitoes.
Primary Vectors: *Ae. aegypti*
Vector Bioeconomics: Breeds almost exclusively in artificial containers that are found in association with man, such as discarded automobile tires, drums, and animal watering vessels. Also occasionally found in natural containers such as leaf axils. Immatures and adults found indoors and out. Adult female mosquitoes are diurnally active and will readily feed on man and

other animals. The flight range is limited.
Control Measures: Restrict outdoor activity, stress wearing personal protective equipment. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. Reduce or eliminate breeding sites, (concentrate on artificial containers) mechanically. Contact DVECC and local Health Department officials to obtain information about disease threat.
Remarks: *Ae. aegypti* has been reported to be resistant to the pesticides (note DDT not used in US)Dieldrin/HCH.

Dengue Hemorrhagic Fever: A severe viral illness characterized by abnormal vascular permeability, hypovolemia and abnormal blood clotting mechanisms. Illness is biphasic, beginning abruptly with fever, often anorexia, facial flush and mild GI disturbances. The condition worsens with marked weakness, severe restlessness, facial pallor and often diaphoresis and circumoral cyanosis.
Vector Transmission - See Dengue
Primary Vector – See Dengue
Vector Bioeconomics – See Dengue
Control Measures- See Dengue

Eastern Equine Encephalitis: An acute inflammatory viral disease of short duration involving parts of the brain, spinal cord and meninges. Most infections are asymptomatic; mild cases often occur as febrile headache or aseptic meningitis. Severe infections are usually marked by acute onset, headache, high fever, meningeal signs, stupor, disorientation, coma, tremors, occasional convulsions and spastic paralysis.
Reservoir: Potentially birds, rodents, bats, reptiles, amphibians and *Culex* spp. (Adults and eggs).
Mode of Transmission: Probably *Culiseta melanura* from bird to bird and one or more *Aedes* spp. And *Coquillettidia* spp. From birds or other animals to humans.
Control Measures: Restrict outdoor activity, stress personal protective measures. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. Reduce or eliminate breeding sites mechanically. Contact local Health Department officials to obtain information about disease threat.

Malaria: A parasitic disease; the four human malarias can be sufficiently similar in their symptoms to make species differentiation generally impossible without laboratory studies.

Furthermore, the fever pattern of the first few days of infection resembles that seen in early stages of many other illnesses (bacterial, viral and parasitic). Even the demonstration of parasites, does not necessarily mean that malaria is all that the patient has.
Vector Transmission: Bite of infective *Anopheles* mosquitoes.
Primary Vectors: *An. albimanus*
Vector Bioeconomics: Actual distribution and seasonality of *An. albimanus* is not known, but is expected to be found throughout the year. Larvae breed in fresh or brackish waters such as pools, blocked estuaries, puddles, marshes, ponds, lagoons, especially those containing floating or grassy vegetation. Larvae prefer sunlight. Adult female mosquitoes feed on man and domestic animals, indoors and outdoors. After feeding, adults typically rest mainly indoors.
Control Measures: Restrict outdoor activity, stress wearing personal protective equipment. Identify breeding sites through surveillance (light trapping, larval dips). Treat adults with aerial/ground ULV. Treat larvae chemically with larvicides. Reduce or eliminate breeding sites mechanically. Contact local Health Department officials to obtain information about disease threat.
Remarks: *An. albimanus* has been found to be resistant to Dieldrin/HCH.

Rodent Associated Diseases: Natural disasters may result in rodents seeking shelter in buildings occupied by humans. This can potentially result in disease transmission.
Control Measures: Integrated pest management plan should include surveys, exclusion, trapping, sanitation, baiting and trapping.

Fly Associated Diseases: In the aftermath of natural disasters, rapid increases in fly populations can pose a significant health risk. The increase in decaying organic material, possible sewage system malfunction and decreased levels of sanitation provide ideal breeding habitats for flies.
Control Measures: Control measures should focus on rapidly restoring sanitation infrastructure to include solid waste storage and disposal; integrity of sewage systems; exclusion from foodservice areas, baiting and possibly aerosolized pesticides.

AUTHORIZED PESTICIDE USE LIST
(YOUR COMMMANDS NAME)

(MONTH AND YEAR OF LIST)

Pesticide	Common Name	Use
Procide	Pipernol bitoxide	aerosol
Wasp Freeze	Naphtha	aerosol-wasps
Amdro Fire Ant	Hydramethylnon	ants
Award	Fenoxycarb	ants
Carbaryl 4L	Carbaryl	ants
Delta Dust	Deltamethrin	ants
Delta guard G	Deltamethrin	ants
Diazinon 5G	Diazinon	ants
Diazinon 500	Diazinon	ants
Drax	Boric Acid	ants
Maxforce w/Fipronil	Fipronil	ants
Maxforce Pharaoh Ant	Hydramethylnon	ants
Outsmart	Boric acid	ants
Talstar PL granules	Bifenthrin	ants
Talstar T & O	Bifenthrin	ants
Saga WP	Tralomethrin	ants (inside)
Dursban 2E & 4E	Chlorpyrifos	ants, mole crickets
Rodeo	Glyphosate	aquatic weeds
Bird-Proof	Polybutene 49%	bird repellent
Velsicol	Ployisobutylenes 2%	bird repellent
Avitrol	4-Aminopyridine	birds
Terramark SPI	no active ingred.	blue spray indicator
Lime	Lime	deodorizer
Macron		fertilizer
Precor 2000 spray	Mehtroprene	flea aerosol
Flee	Permethrin	fleas
Kicker	Pyrethrin	fleas
Precor	Methroprene	fleas
Stimukil fly bait	Methomyl	flies
Prentox	Pyrethrin	fogging
Pyrenone 10-1	Pyrethrins	fogging
ULD-BP-50	Pyrethrins	fogging
Banner/Maxx	Propiconazde	fungicide
Copper, liquid	copper	fungicide
Chelated iron +	Iron	greens up grass
Bentgrass select.	Dimethylamine salt	Herbicide
Momentum	Trilisopropanolamine	Herbicide
LescoGran	Methylethyl	Herbicide

Pesticide	Common Name	Use
Malathion 5	malathion	herbicide
Manage	methyl-carboxylate	herbicide
MSMA 6.6	monosidium acid methanarsonate	herbicide
Oust	Sulfometuron-methyl	herbicide
Reward aquatic	Diquatdibromide	herbicide
Scythe herbicide	Pelargonic acid	herbicide
Stomp herbicide	Pendimethalin	herbicide
Three way ester	methyl chlorophen	herbicide
Image herbicide	Imidazolinone	herbicide, sandspurs
Dursban 4E	Chloropyrifos	insecticide for turf
Merit 75 WP	Imidacioprid 75%	insects on roses
Octagon Process	Malathion	mosquitoes, flies
Permanone	Permethrin	mosquito fog
Scourge 4-12	Resmethrin	mosquito fog
Altosid briquettes	Methoprene	mosquito larvae
Aqua Bac	Bti	mosquito larvae
Baytex	Fenthion	mosquitoes
Malathion ULV	Malathion	mosquitoes
Repellent	nn-Diethyl-m-toluamide	mosquitoes
Roundup Pro	Glyphosate	non-selective herbicide
Sevin Brand SL	carbaryl	ornamental pests
Rozol tracker powder	Chlorophacinone	rat tracker powder
Rodent cake	Warfarin	rats
Rodenticide, anticoag.	Warfarin	rats
Talon G rat bait	Brodifacoum	rats
ZP Rodent bait	Zinc phosphide	rats
Cynoff WP	Cypermethrin	roaches
Permanone arth. rep.	Permethrin	repellent
Niban		roach bait
Bor-Act roach control	Boric acid	roaches
CD-80 Extra	Pyrethrins 5%	roaches
Cynoff EC	Cypermethrin	roaches
Diazinon 4E	Diazinon	roaches
Excite-R	Pyrethrins	roaches
Fog & Mill spray	Pyrethrin	roaches
Inspector	Pyrethrin	roaches
It Works roach paste	Boric acid	roaches
Maxforce Roach control	Hydramethylnon	roaches
Maxforce Roach gel	Hydramethylnon	roaches
Permadust	Boric acid	roaches
Acephate	Orthene	roaches, ants
Demon EC	Cypermethrin	roaches, ants
Demon 40 WP	Cypermethrin	roaches, ants

Pesticide	Common Name	Use
Demon WF	Cypermethrin	roaches, ants
Dursban Pro	Chlorpyrifos	roaches, ants
Ditrac Blox	Diphacinone	rodents
Petroleum Oil	Volck	scale insects
Phostoxin	Aluminum phosphid	stored product pests
Spreader-Sticker	nonionic spray adjuv	surfactant
Dursban TC	Chlorpyrifos	termites
Spectracide Bait	Sulfluramid 01%	termites
Tim-bor	Disodium octaborate	termites
St Augustine weed/feed	Atazine	turf
Tempo 20 WP	Cyfluthrin	turf crickets, white grubs
Bayleton-25	Triadimefon	turf fungus
Bayleton-50%	Triadimefon	turf fungus
Daconil	Chlorothalonil	turf fungus
Manicura	Chlorothalonil	turf fungus
Thalonil	Chlorothalonil	turf fungus

EQUIPMENT AVAILABILITY LISTING
(YOUR COMMANDS NAME)
(MONTH AND YEAR OF LIST)

ITEM	MAKE	QUANTITY
DRILL HAMMER	MAKITA	2
SPRAYER	HERBICIDE 300 GAL	1
A.T.V.	POLARIS 4 X 4	1
SPRAYER	HERBICIDE 750 GAL	1
FOGGER, BACKPACK	LECO	1
SPRAYER 100 GAL		2
HANDCOMPRESSED SPRAYER	B & G	5